

REDDSTAR

The REDDSTAR (Repair of Diabetic Damage by Stromal Cell Administration) consortium is a multinational collaboration involving academic groups in the EU with expertise in the vascular damage resulting from complications of diabetes mellitus. The aim of the REDDSTAR consortium is to significantly impact the management and treatment of the complications of diabetes mellitus. The collaboration is relevant to clinicians, researchers in diabetes mellitus, drug/pharmaceutical companies and ultimately the general public. Our goal is to improve the treatments available for patients with microvascular damage and complications from diabetes, and to enhance their health and quality of life. Ultimately such improvements will lead to a reduction in public health costs associated with diabetes mellitus and related complications.

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There is currently no available treatment that will improve the control of blood glucose and simultaneously address underlying diabetic complications. REDDSTAR is novel in its reach across the control of blood glucose and the improvement of a range of six serious diabetic tissue complications: retinopathy, cardiomyopathy, nephropathy, wound healing, neuropathy and bone fracture repair. While REDDSTAR's network of experts is currently testing the safety and efficacy of mesenchymal stromal cells, funded by the European Commission, it also has the capacity to test other medicines and treatments to manage diabetic glycaemia and its resulting microvascular complications.

Before REDDSTAR, individual diabetic complications tended to be focused upon as discrete entities; the synergies and expert knowledge-sharing between leaders in the field had not realized its full potential. The broad scope of the REDDSTAR network is an unprecedented collaboration between specialists in diverse areas providing a unique selling point and competitive advantage. Common standard operating procedures, including tissue harvesting and analysis protocols, and a unified, secure data collection and storage mechanism will enable valuable comparisons and correlations between samples and results. This research community features a unique, multi-disciplinary approach to study glycaemic levels in validated diabetic models and aims to ameliorate its complications.

Testimonial from Dr. Steve Elliman, Head of Research, Orbsen Therapeutics:

"The REDDSTAR network represents a unique combination of experts in diabetic complications and diabetic clinical trials. This EU program represents the perfect opportunity for a therapy developer to assess the pre-clinical safety and efficacy of their medicine in six of the key complications of diabetes mellitus. We expect that our collaboration with this network will yield significant rewards in terms of data, expert interpretation and safe translation of our therapy to clinical studies."



Queen's University
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WHO WE ARE:

The Regenerative Medicine Institute (REMEDI)

at the National University of Ireland Galway was established as a Centre for Science, Engineering and Technology in 2004 with funding from Science Foundation Ireland. It is recognized as the Irish national centre for stem cell and gene therapy research and works to translate its research in the orthopaedic, cardiovascular and neural areas to clinical applications. REMEDI collaborates with the University College Hospital, Galway whose Clinical Research Facility has enabled translation of research outcomes to clinical settings. REMEDI is directed by Prof. Tim O'Brien, an internationally acknowledged expert in the field of diabetes and vascular disease. REMEDI has state of the art facilities including pre-clinical, microscopy, spectrometry, biomechanics, supercomputing, molecular biology and functional genomics suites.

Professor Tim O'Brien

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The Department of Cardiology and Pneumology at the Charité-Universitätsmedizin Berlin, Campus Benjamin Franklin, is internationally recognized in the field of cardiomyopathies. With a strong interdisciplinary program of basic and clinical research, and technology platforms within an innovative translational infrastructure, the **Berlin-Brandenburg Center for Regenerative Therapies (BCRT) at the Charité- Universitätsmedizin Berlin** is focussed on new methods and products for stimulating endogenous regeneration processes through the use of cells, biomaterials, and biologically active factors to provide long term treatment for diseases including of the immune and cardiovascular system. Core Research Units include next generation sequencing, proteomics, flow cytometry, GMP and cell harvesting. Professor Dr. Carsten Tschöpe is the Deputy Director of the Department of Cardiology and Pneumology at Campus Benjamin Franklin and head of the cardiovascular system platform at the BCRT.

Professor Dr. Carsten Tschöpe

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Centre for Vision & Vascular Science (CVVS) at Queen's University Belfast

is a centre of excellence in experimental ophthalmology emphasizing research into diabetic retinopathy and age-related retinal disorders. The CVVS is located in the Institute of Clinical Science, Royal Victoria Hospital Belfast. Staff within the centre has access to modern cell biology laboratories and cutting edge facilities which underpins the high-impact research being performed, including suites for cell culture, histology, microscopy, molecular biology, vascular physiology, bioimaging and clinical research. The CVVS has a strong translational remit with a focus on important cellular and molecular mechanisms of retinal blood vessel dysfunction in the context of diabetes. A recent Wellcome-Wolfson Foundation Capital Award will establish a £23 Million Translational Vision Science Building scheduled for completion in October 2014. Director Prof. Alan Stitt's research investigates promotion of therapeutic retinal angiogenesis thereby initiating reparative processes.

Professor Alan Stitt

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Ludwig-Maximilians University's (LMU) Anders & Vielhauer laboratory is part of the Institute of Clinical Biochemistry, Medical Policlinic, Inner City University Hospital, Ludwig-Maximilians University. Embedded in the academic environment of the University of Munich and international networks, this laboratory focuses on the identification and validation of new targets in experimental disease models in an impactful clinical and research effort on all aspects of blood glucose control and renal complications resulting from diabetes and for chronic inflammation in chronic kidney disease and autoimmunity. Collaborating with the German Center for Diabetes Research Munich the facility enables RNA technologies, molecular biology, histology, cell culture, and protein technologies. Professor Anders is a physician and Head of Nephrology at the Inner City Campus of the University of Munich.

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The University of Porto Faculty of Medicine (FMUP) Pain Unit use experimental pain models with a translational perspective. Affiliated with the IMCB- Institute for Molecular and Cell Biology and part of the Experimental Biology Department, the FMUP Pain Unit facility enables immunohistochemistry, light and electron microscopy, behavioural analysis, electrophysiological recordings, pharmacological manipulation, gene transfer and in vivo microdialysis and includes particular suites for detailed evaluation of animal behavioural pain, anxiety and cognitive tests. The FMUP Pain Unit studies diabetic neuropathy by using electrophysiological recordings of neurons of pain control centres of the brain, gene therapy manipulation and in vivo microdialysis. Principal Investigator Dr. Isaura Tavares is a leader in pain research with a particular interest and research focus on diabetic neuropathy and heads a skilled team of seven with expertise in nociceptor model behaviour and microsurgery.

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[www.expbiologydep.med.up.pt/
research_rg1.html](http://www.expbiologydep.med.up.pt/research_rg1.html)

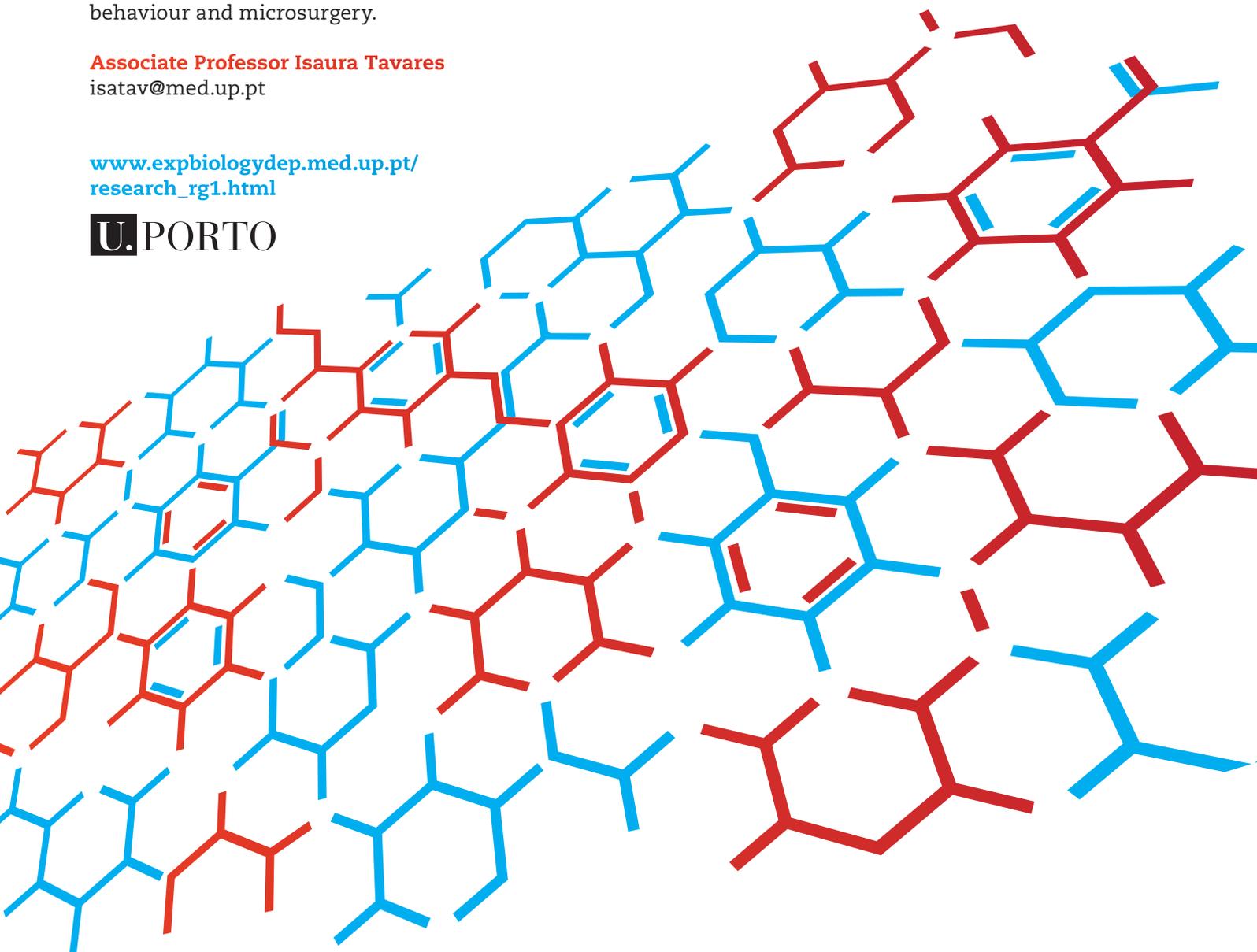
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Pintail Ltd. is a SME based in Dublin whose main activities include cloud computing software development, technology transfer, and academic/ industry collaboration. Pintail's data management mechanism facilitates the storage and sharing of large reservoirs of pre-clinical findings. This cloud-based system modelled on the 'Study Vault' platform allows for high security, controlled-access data storage, subject anonymization, arbitrary cohort, trial, factor/marker and measurements, and longitudinal/repeated measurement tracking. The Pintail system has been thoroughly validated and implemented.

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The REDDSTAR network is a team of diabetic specialists, researchers and clinicians working together in cutting edge facilities to develop, validate and translate new breakthroughs in the treatment of diabetes and its associated complications using novel approaches. The network has been assembled specifically to meet the requirements of the www.REDDSTAR.eu project but also with the aim of establishing an enduring, collaborative scientific platform across Europe.

Each partner brings its own expertise and track record with excellent, proven synergies between their areas of research. For the clinical partners, the network opens an exciting avenue for shared research on the set of complications as a single multi-faceted problem domain. This research network approach has several key advantages:

- Correlations and relationships between complications are identified and investigated
- Clinical samples are used to examine multiple conditions rather than a single one, thereby increasing the data yield of clinical studies
- Data relevant to a spectrum of specializations is collected and shared rather than each team simply collecting the data of discrete interest to themselves and disregarding the rest
- A holistic view of the patient leads to new insights and may lead to better outcomes

Current research on microvascular damage resulting from diabetes complications suffers from the limited cross-talk among the different fields. REDDSTAR's innovative network brings together in a coordinated fashion the research in diabetes complications, providing a more unified approach and data sharing among groups.

The provision of a common forum to generate and share scientific knowledge on different diabetic complications that are often viewed in isolation has a beneficial impact.

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